

BURIAL EFFICIENCY OF TOTAL ORGANIC CARBON IN SEDIMENTS OF HIGH PRODUCTIVE WESTERN MARGIN OF INDIA

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The western margin of India is recognised as an area of intense upwelling and high productivity. Presently, total organic carbon in the surficial sediments displays moderate concentrations (4%) in inner shelf, low concentrations (1%) in outer shelf, extremely high concentrations (4-8%) in the mid-slope followed once again by low contents in rise and adjoining deep-sea areas. The mid-slope enrichment of total organic carbon in sediments is evidenced as an example of its efficient preservation in dysaerobic environment of 'Oxygen Minimum Zone'. To verify this philosophy, we investigated the concentration of total organic carbon in near-bottom suspended particulate, its source in surficial sediments by $\delta^{13}\text{C}$, its contents in short cores (mostly covering Holocene period), and calculated its burial efficiency. The concentration of total organic carbon in near-bottom suspended materials ranged from 0.76 to 1.96%. The suspended particulates were collected during the season when the influx of terrigenous materials is minimal and hence these particulates represent true organic matter produced autochthonously. The $\delta^{13}\text{C}$ values in sediments ranged between -19.6 to -20.9‰ suggesting that source of organic matter in these sediments is predominantly marine. Interestingly, concentration of total organic carbon in suspended particulates did not show any relationship either with depth of the water column or the concentration of total organic carbon in surficial sediments. This suggest that organic contents in sediments and their burial efficiencies are mainly determined by the environment of deposition and does not depend on the supply of organic material, which incidentally in the present case is the primary productivity.